Appl. No. 09/769,604   Docket No. EMC-002PUS

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

1.   (Previously Presented) A method of restoring backed up data, comprising:

retrieving, by a data backup storage system, a list of objects that are restorable by a client having a backup/restore module and a logical volume manager to communicate with a storage system, the backup storage system having a storage system interface to communicate with the storage system, a backup storage unit to store backed up data, and a network interface to communicate with the client;

displaying the list of restorable objects for browsing by a user, wherein the restorable objects are located on a plurality of physical storage devices;

generating a first list of restorable objects marked for restoration by the user, wherein each of the restorable objects is associated with a particular library, wherein the library supports at least one catalog containing information for the backed up data including media type and metadata;

submitting the first list of marked restorable objects to the backup storage system for restoration for the client;

submitting a second list of marked restorable objects to the backup storage system;

executing, by the backup storage system, a restoration of the submitted first and second lists of marked restorable objects via a remote procedure call such that first and second restore submissions can be made prior to restore execution.

2.   (Previously Presented)   The method according to claim 1, further including executing the first and second lists of marked restorable objects concurrently.

3.   (Original)   The method according to claim 1, further including initiating a restore session for the client.

4. (Original) The method according to claim 3, further including creating a restore engine process for the retrieving, browsing, submitting and executing of restore objects.

5. (Original) The method according to claim 4, wherein the client communicates with the restore engine process via remote procedure calls.

6. (Original) The method according to claim 4, wherein the restore engine process is created by a dispatch daemon on a backup storage system server.

7. (Original) The method according to claim 4, wherein the restore engine process is terminated upon completion of the restore execution.

8. (Original) The method according to claim 4, wherein the restore engine process runs on a backup data storage server and further including creating a work item restore process on the backup data server, a server restore process for generating a stream of data to be restored, and a client restore process for receiving the data stream.

9. (Original) The method according to claim 4, further including detecting and identifying libraries that support associated catalogs of backed up data for processing of backed up data by the restore engine process.

10. (Original) The method according to claim 9, further including adding a new library supporting new methods of backing up data.

11. (Original) The method according to claim 9, further including determining object types for backed up data supported by the libraries.

12. (Previously Presented) A method of restoring backed up data, comprising:
initiating a restore session for a first client via a dispatch daemon running on a data storage server through a graphical user interface associated with the client;

creating a restore engine process in response to a request by the dispatch daemon;

establishing a connection between the graphical user interface and the restore engine process;

displaying a list of restorable objects for browsing by a user associated with the client via the graphical user interface under the control of the restore engine process;

identifying restorable objects marked for restoration by the user under control of the restore engine process;

storing first and second lists of marked restorable objects submitted by the client to the restore engine process; and

executing the restoration of the first and second lists of marked objects under control of the restore engine process independently of the browsing, marking and submitting of the restorable objects such that multiple restore submissions can be made prior to restore execution.

13. (Original) The method according to claim 12, wherein the client communicates with the restore engine process via remote procedure calls.

14. (Original) The method according to claim 12, further including supporting a new backup data method by adding a library corresponding to the new backup data method.

15. (Previously Presented) A data backup and storage system, comprising:

a backup storage system for storing backup data from a client storage system under control of a user associated with the client, the backup storage system including:

a server creating a restore engine process as part of a restore session with a client, the restore engine communicating with the client via remote procedure calls to allow the user to browse restorable objects, mark selected ones of the restorable objects for restoration, submit first and second lists of restorable objects marked by the user, and execute restoration of the submitted first and second lists of restorable objects, wherein the restore execution is performed independently of the browse, mark and submit operations such that multiple restore submissions can be made prior to execution of the restore; and

a work item restore process, a server restore process, and a client restore process created by the restore engine process to form a restore triangle for executing the restore operation.

16.   (Canceled)

17.   (Original)   The system according to claim 15, wherein the restore engine process processes libraries upon restore initialization such that libraries can be added to the system for supporting new backup methods.

18.   (Original)   The system according to claim 17, further including a dispatch daemon for initiating the restore session.

19.   (Original)   The system according to claim 15, further including further restore engine processes corresponding to further restore sessions initiated by additional clients.

20.   (Original)   The system according to claim 19, further including additional restore triangles for executing multiple work item restores concurrently.

21.   (Previously Presented)   The system according to claim 15, wherein each of the restorable objects is associated with a particular library.

Appl. No. 09/769,604   Docket No. EMC-002PUS

22. (New) A method of restoring backed up data, comprising:

retrieving, by a data backup storage system, a list of objects that are restorable by a client having a backup/restore module and a logical volume manager to communicate with a storage system, the backup storage system having a storage system interface to communicate with the storage system, a backup storage unit to store backed up data, and a network interface to communicate with the client;

displaying the list of restorable objects for browsing by a user, wherein the restorable objects are located on a plurality of physical storage devices;

generating a first list of restorable objects marked for restoration by the user, wherein each of the restorable objects is associated with a particular library, wherein the library supports at least one catalog containing information for the backed up data including media type and metadata;

submitting the first list of marked restorable objects to the backup storage system for restoration for the client;

submitting a second list of marked restorable objects to the backup storage system; and

executing, by the backup storage system, a restoration of the submitted first and second lists of marked restorable objects via a remote procedure call such that first and second restore submissions can be made prior to restore execution,

wherein the objects in the list of objects includes encapsulated information to initialize, execute, and cleanup the restore execution;